

Memorandum



Vickery

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Reverts

cc Henault

DATE : March 31, 1976
TO : All Safety Committee Chairmen
FROM : Gordon Vickery
(Sgd.) Gordon Vickery
SUBJECT: Handling of Askarels or Polychlorobiphenol (PCB)

The subject of the hazards of handling "askarel", a polychlorobiphenol, (PCB), was originally brought to the attention of the Safety Section in 1974 when a quantity was dumped inadvertently into the Duwamish River. Federal agencies became increasingly concerned that the PCB could cause damage to marine life and they attempted to remove it. At the time only a portion was removed. Recently the government appropriated additional funds and the job was completed.

On January 16, 1975, a memorandum of instructions on the handling and disposal of this product was issued by the Safety Section of Administrative Services to all supervisors concerned. Mr. Walker has now prepared a detailed instruction on the "safe handling of PCB". To make certain that all concerned employees are informed, we are furnishing copies of the instructions that deal with "safe handling of" and "disposal of" polychlorobiphenol (PCB).

Note: These instructions should be posted on bulletin boards.

LP:mgs

Attachment

Walker
cc: Safety Committee
Chairmen
Vickery
Coe
Winkley
Peha
File
HENAUET

Polychlorobiphenyls (Askarel), Safe Handling of:

Toxicity

PCBs are poorly metabolized and tend to accumulate in animal tissues including humans. Studies have revealed PCBs in human fat tissue and blood plasma.

Human Effects

The known toxic effects of PCBs in humans include an acne-like skin eruption (chloracne), pigmentation of the skin and nails, excessive eye discharge, swelling of eyelids, distinctive hair follicles.

Workers exposed to PCBs in the process of insulating cables, in the production of condensers, etc., have reported these skin lesions along with systemic effects such as digestive disturbances, edema of the face and hands, burning of the eyes, impotence, and hematuria.

Permissible Exposure

The current (1975) Occupational Safety and Health Administration, Department of Labor Standards for chlorinated biphenyls are 1 mg./cubic meter for 42 percent chlorine mixtures and .5 mg/cubic meter for 54 percent chlorine mixtures. These are based on the threshold limit values (TLV) established by the American Conference of Governmental Industrial Hygienists.

Handling Procedure

As PCB is toxic and can be absorbed through the skin, we ask that rubber gloves be worn by employees working with this material and that they work only in a well ventilated area. Long sleeve shirts or other protective clothing should be worn to protect and cover as much bare skin as possible. It is recommended that when pumping and handling PCB, goggles or face shield be worn to protect the eyes from splash and spray. These precautions should also be observed when taking and testing askarel samples.

Safety Procedure

At completion of handling PCB, or more often if deemed necessary, the face, hands and other exposed skin areas are to be flushed with clean water, using soap if available. When any splash or spray contacts skin area, it shall be washed off immediately.

The effects of PCB contamination of the skin may not be felt immediately and, in some patients, symptoms persist as long as three years after PCB exposure.

Polychlorbiphenyls (Cont.)

Storage of PCB

When containers of PCB are received by the warehouse and field crews, the containers are to be inspected for leaks and loose or improperly fitting caps and plugs. Defective containers are to be repaired or replaced.

All PCBs will be stored in a well ventilated area and secured to prevent unauthorized removal and/or use.

Disposal of PCB

Clean reusable PCB will be placed in sealed containers and returned to stock for storage. Contaminated PCB will be stored in non-leaking 55 gallon drums or other suitable containers until sufficient quantity for shipping has accumulated.

Contaminated clothing, gloves, cleanup rags, etc. saturated with PCB will be stored in 5 gallon cans and shipped to disposal site. Rubber gloves are to be washed at the end of each work period or day, whichever is the shorter, then inspected for cuts and holes. Those unfit for reuse will be disposed of. All PCB contaminated dirt, rocks, wood, etc. is to be collected in suitable sealed containers and disposed of with PCB. Do not wash, burn or dispose of contaminated articles or material in any other way.

When sufficient contaminated PCB and other items are collected by the warehouse, the containers will be marked "WASTE CHEMICALS CONTAINING PCB" and shipped to the disposal site.

Blown capacitor units when removed are to be shorted and sent to the warehouse for disposal. Ruptured units are to be placed in heavy plastic bags or other suitable containers to prevent further spillage of PCB. All BO units will be strapped to pallets by the warehouse, marked "Bad Order Capacitors - Contain PCB" and shipped to the disposal site.

Equipment Cleanup

All pumps, tools and other equipment used in handling PCB are to be cleaned of PCB at the end of each work day. Liquids and other materials used in cleaning are to be disposed of with contaminated PCB. DO NOT put PCB or cleaning fluids into any sewer system or dump on the ground.

Background

Polychlorinated biphenyls (PCBs) describe a group of synthetic chlorinated organic compounds. There are 209 different chlorinated biphenyls and they are collectively referred to as PCBs although many are not actually POLY-

Polychlorbiphenyls (Cont.)

chlorinated. Approximately half of these compounds have been synthesized and characterized.

Mixtures of polychlorinated biphenyls are important industrial products. The most common trade names for these mixtures are:

- Aroclor - Monsanto Co.
- Inerteen - Westinghouse
- Pyranol - General Electric
- Dykanol - Federal Pacific Electric
- Chlorextol - Allis-Chalmers
- Santotherm - Mitsubishi-Monsanto, Japan

PCBs containing dielectrics (electrical insulators) are generally referred to as "Askarels" in the electrical industry.

Commercial PCBs are generally mixtures of many different chlorinated biphenyls manufactured to meet operational specifications (such as dielectric constant, flash point, fire point, density, percent of chlorine, and color); these commercial mixtures may vary chemically from batch to batch.

USES

PCBs are used in capacitors and transformers because they combine attractive dielectric properties with chemical stability and fire resistance.

Prior to the environmental concern surrounding the persistence and ubiquitousness of PCBs, they were more widely used in industry as fluids for heat transfer systems, hydraulic systems, gas turbines, and vacuum pumps as fire retardants, and as plasticizers in adhesives, textiles, surface coatings, sealants, printing, and carbonless copy paper.

More than 95 percent of all power capacitors contain PCBs. Among their applications are use on electric utility lines, in air conditioners, and in the ballasts of fluorescent lamp fixtures. PCBs are employed for safety, reliability, and long life, as well as to achieve size compatibility with equipment and installation requirements. However, non-PCB power capacitors are being manufactured which may serve as alternatives.

PCBs are employed in transformers at locations where their proximity to people and/or property demands a fire resistant dielectric.

Information

Further questions on PCB should be referred to the Safety Division.

RBE:jh